Employment and Wages for Alberta Workers with a Post-Secondary Education

Alberta

Abstract

Between 2013 and 2017, Alberta's economy is expected to add approximately 163,000 new jobs.[1] In addition, approximately 57.4% of all new jobs are expected to require some form of learning beyond a high school education.[2] Post-secondary education is a degree, certificate (including a trade certificate), or diploma from an educational institution beyond the secondary (high school) level.[3] More education and training is expected to be a key to success in the new economy. Over the next five years, there will be a strong demand for occupations that need university degrees.

A major challenge with this growth in employment is matching the demands of the new workplace and evolving economy with the skills of its workforce. Since the new jobs created will favour the well qualified, post-secondary education is a requisite for having a competitive advantage in the labour force. This report investigates the relationship between education levels, employment, and earnings and tests the hypothesis that as people get more education, the chance of obtaining employment and higher earnings increases.

By using data from the 2012 Labour Force Survey, expected wages and salaries of high school graduates and graduates of post-secondary schooling have been analyzed. The main findings of this investigation are that for males and females, a higher level of educational attainment results in increased participation in the workforce, reduced chance of unemployment, higher pay, and higher earnings throughout a working career.

[1] *Alberta Regional Occupation Outlook: 2013-2017*
[2] *Alberta Regional Occupation Outlook: 2013-2017*
[3] Statistics Canada's Labour Force Survey

Alberta Labour Force Characteristics and Education Levels

Labour Force Statistics and Education Levels for Alberta

The working age population is composed of persons 15 years of age and over, excluding persons living on native reserves, inmates of institutions, and full-time members of the Canadian Armed Forces.[4] In 2012, more than 1.8 million Albertans aged 15 years and over had some level of post-secondary education.[5]

The labour force is composed of that portion of the working age population who, during the reference week, were employed or unemployed. The reference week is defined as the week containing the 15th day of the month in which information is collected for the Labour Force Survey.[6]

Table 1 shows the labour force and working age population by education levels for Albertans in 2002 and 2012. Between 2002 and 2012, Alberta's labour force with a university graduate[7] degree increased by 60%, followed by a 58.7% increase for those with a university bachelor's degree. In addition, those in the labour force with a post-secondary certificate or diploma increased by 29.2% and the number of high school graduates in the labour force increased by 43.1%.

Table 1

Alberta Labour Force and Working Age Population by Education Level						
	Labour Force			Working Age Population		
	2002	2012	Change	2002	2012	Change
High School Graduate	379,700	543,400	43.1%	491,500	721,500	46.8%
Post-secondary Certificate or Diploma	601,800	777,800	29.2%	744,700	977,300	31.2%
University Bachelor's Degree	231,500	367,300	58.7%	279,000	445,500	59.7%
University Graduate Degree	89,900	143,800	60.0%	108,400	172,300	58.9%

Data Source: Statistics Canada's Labour Force Survey

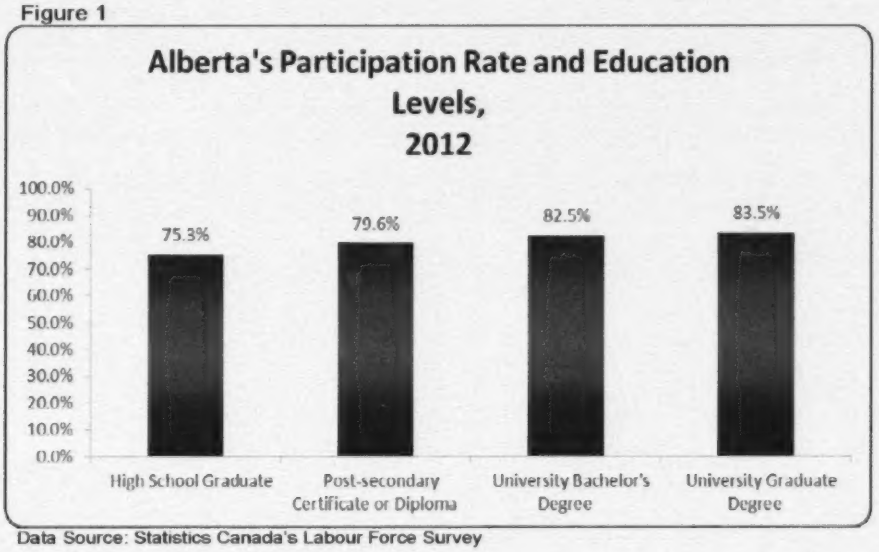
Between 2002 and 2012, the number of university bachelor's degree holders in the working age population had the greatest increase at 59.7%, followed by those with a university graduate degree at 58.9%, and then by high school graduates at 46.8%. The number of Albertans in the working age population with a post-secondary certificate or diploma had the smallest increase at 31.2%.

[4] *Guide to the Labour Force Survey:* Statistics Canada, 2012
[5] Statistics Canada's Labour Force Survey, 2012
[6] *Guide to the Labour Force Survey:* Statistics Canada, 2012
[7] Master's or Doctorate degree

Labour Force Participation Rate and Education Levels

The participation rate represents the total labour force expressed as a percentage of the working age population (persons 15 years of age and older).[8] Figure 1 displays Alberta's participation rate by education levels for 2012. The participation rate for those with a post-secondary certificate or diploma was 4.3 percentage points higher than for high school graduates. Albertans with a university graduate degree experienced the highest participation rate at 83.5% (8.2 percentage points higher than for high school graduates). The participation rate for Albertans with a bachelor's degree was the second highest at 82.4%.

Figure 1



Data Source: Statistics Canada's Labour Force Survey

The relationship between the participation rate and education levels was investigated using the Chi Square statistic and was found to be statistically significant at the 0.01 level (99% confidence level). As individuals gain more knowledge, skills, they are more likely to participate in the workforce.

[8] *Guide to the Labour Force Survey:* Statistics Canada, 2012

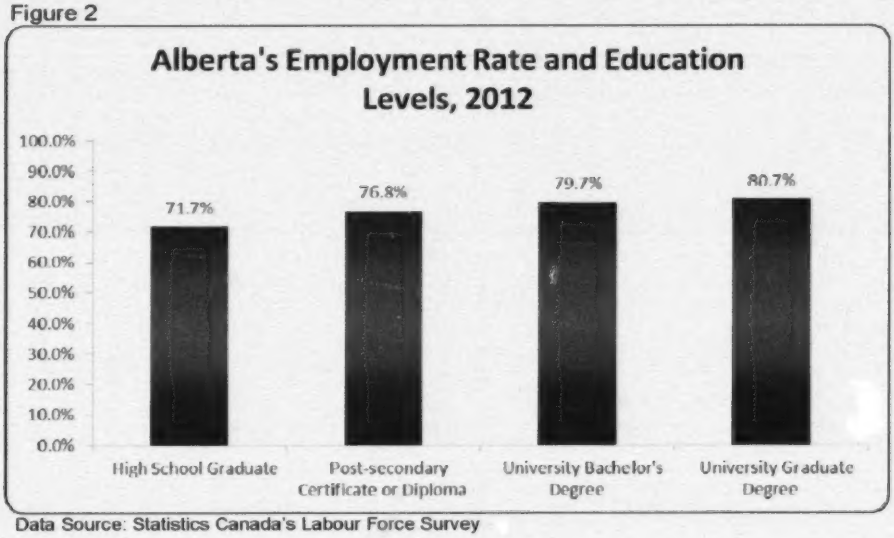
Employment Rate and Education Levels

The employment rate represents the number of persons employed expressed as a percentage of the working age population (persons 15 years of age and older). The employment rate reflects, to a certain extent, the state of an economy. A high employment rate indicates the ability of an economy to create jobs and to employ a large percentage of its working age population.[9]

Job attainment in Alberta for those with a post-secondary education was higher than for those without. Between 2002 and 2012, employment increased by 58.9% for people with university degrees and by 29.8% for those with post-secondary diplomas or certificates, while employment for those with less than a high school education decreased by 2.4%.

Figure 2 indicates that post-secondary graduates experienced higher employment rates than high school graduates. The employment rate for those with a post-secondary certificate or diploma was 5.1 percentage points higher than for high school graduates. Albertans with a university graduate bachelor's degree experienced the highest employment rate of 80.7% followed by those with a bachelor's degree at 79.7%.

Figure 2



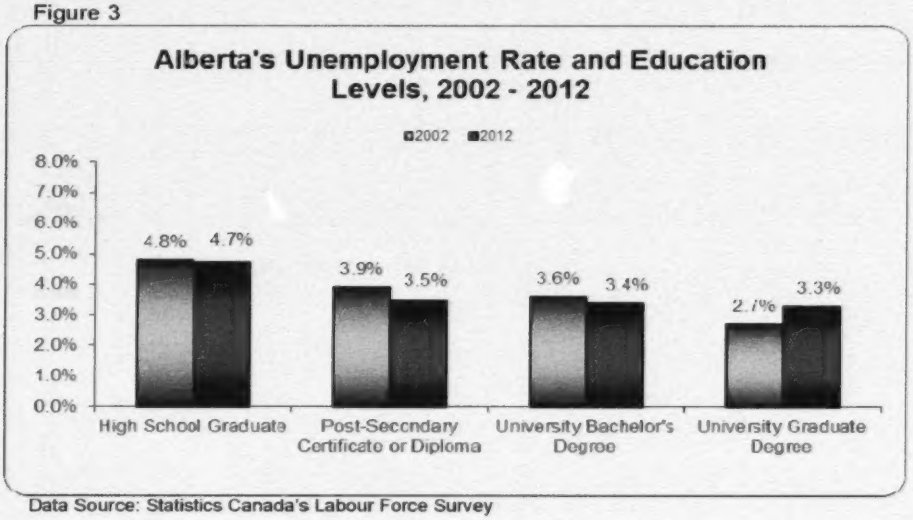
Data Source: Statistics Canada's Labour Force Survey

[9] *Guide to the Labour Force Survey:* Statistics Canada, 2012

Unemployment Rate and Education Levels

The unemployment rate represents the number of unemployed persons expressed as a percentage of the labour force.[10] Figure 3 reflects the unemployment rate of Albertans with varying degrees of education for 2002 and 2012. Those who earned a graduate degree had a lower unemployment rate than those with other education levels in 2012. Higher education levels reduce the risk of unemployment[11]. Furthermore, with each level of education attained the incidence of involuntary part-time employment (meaning those who are employed part-time when they would prefer to be working full-time) decreases.[12]

Figure 3



Data Source: Statistics Canada's Labour Force Survey

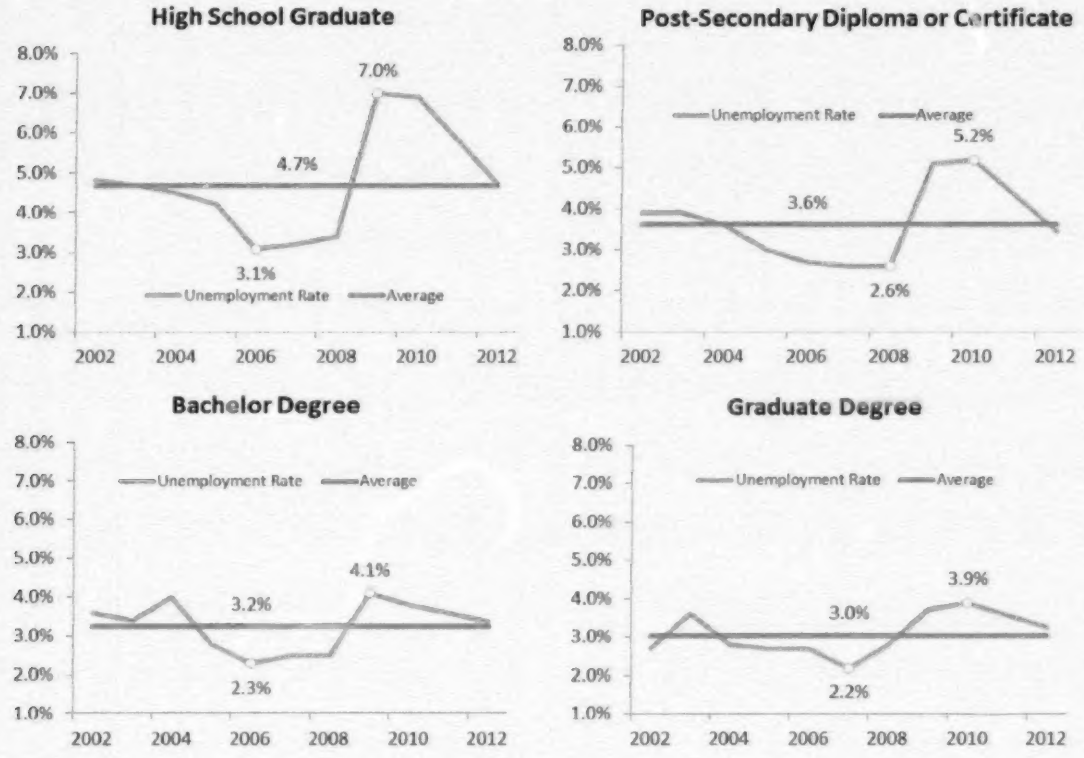
[10] *Guide to the Labour Force Survey:* Statistics Canada, 2012

[11] HRSDC *Special Reports: January 2008 — "What Difference Does Learning Make to Financial Security?"*

[12] *Part-time by choice: Perspectives on Labour and Income,* Statistics Canada Catalogue 75-001-XIE, 2000

Figure 4 shows the annual and average unemployment rates for the four different education levels between 2002 and 2012. High school graduates had the highest average unemployment rate of 4.7%, over the last ten years with a highest rate of 7.0% in 2009 and a lowest rate of 3.1% in 2006. Those who obtained graduate degrees had the lowest average unemployment rate of 3.0% over the ten year period with a lowest rate of 2.2% in 2007 and a highest rate of 3.9% in 2010. Figure 4 shows that not only does the unemployment rate decrease for higher levels of education but also that it becomes more stable.

Figure 4



Data Source: Statistics Canada's Labour Force Survey

Employment and Education Levels in Alberta

This section discusses employment and education levels in Alberta and test the hypothesis employment is related to education. Tables created by Alberta's ministry of Enterprise and Advanced Education (EAE) using Statistics Canada's 2012 Labour Force Survey show the employment probability by age for employed males and females.

Male Working Age Population in Alberta

Table 2A shows that males aged 25 to 44 with a high school diploma had a 90% probability of employment[13], those with a post-secondary certificate or diploma had a 94% probability, and those with a university bachelor's degree had a 93% probability. Males aged 45 to 64 with a high school diploma had a 84% probability of employment, those with a post-secondary certificate or diploma had a 84% probability, and those with a university graduate degree had a 91% probability.

Table 2A

Alberta Employment Probability for Males by Education Levels, 2012

Age	15 to 24				25 to 44			
Employment Status	Employed	Unemployed	Not in Labour Force	Total	Employed	Unemployed	Not in Labour Force	Total
High School Graduate	0.74	0.06	0.20	1.00	0.90	0.04	0.06	1.00
Post-Secondary Certificate or Diploma	0.87	0.04	0.09	1.00	0.94	0.02	0.04	1.00
University Bachelor's Degree	0.76	0.07	0.17	1.00	0.93	0.02	0.04	1.00
University Graduate Degree	0.69	0.15	0.15	1.00	0.92	0.03	0.05	1.00

Age	45 to 64				65 to 69			
Employment Status	Employed	Unemployed	Not in Labour Force	Total	Employed	Unemployed	Not in Labour Force	Total
High School Graduate	0.84	0.03	0.13	1.00	0.41	0.02	0.57	1.00
Post-Secondary Certificate or Diploma	0.84	0.03	0.12	1.00	0.45	0.02	0.53	1.00
University Bachelor's Degree	0.83	0.03	0.13	1.00	0.49	0.02	0.49	1.00
University Graduate Degree	0.91	0.02	0.06	1.00	0.53	0.04	0.44	1.00

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata
Prepared by: Enterprise and Advanced Education
Analysis excludes those with less than high school or who have some post-secondary

The relationship between levels of education and employment for males in the labour force was statistically significant at the 0.01 level of probability (99% confidence level). The results indicate that there was a strong relationship between the level of educational

[13] Probability of employment for high school graduate in the age group 25 to 44 = The employment number of high school graduates in the age group 25 to 44 ÷ The total number of high school graduates aged 25 to 44.

attainment and employment. This finding is supported by past research.[14] Therefore, as males attain higher levels of education and skills, their chance of being employed increases.

Female Working Age Population in Alberta

Table 3A shows that females aged 25 to 44 with a high school diploma had a 73% probability of employment, those with a post-secondary certificate or diploma had a 80% probability, and those with a university bachelor's degree had a 83% probability. Females aged 45 to 64 with a high school diploma had a 72% probability of employment, those with a post-secondary certificate or diploma had a 76% probability, and those with a university graduate degree had a 83% probability.

Table 3A

Alberta Employment Probability for Females by Education Levels, 2012

Age	15 to 24				25 to 44			
Employment Status	Employed	Unemployed	Not in Labour Force	Total	Employed	Unemployed	Not in Labour Force	Total
High School Graduate	0.74	0.05	0.21	1.00	0.73	0.04	0.23	1.00
Post-Secondary Certificate or Diploma	0.79	0.06	0.16	1.00	0.80	0.03	0.17	1.00
University Bachelor's Degree	0.82	0.03	0.16	1.00	0.83	0.03	0.15	1.00
University Graduate Degree	0.61	0.05	0.34	1.00	0.83	0.03	0.14	1.00

Age	45 to 64				65 to 69			
Employment Status	Employed	Unemployed	Not in Labour Force	Total	Employed	Unemployed	Not in Labour Force	Total
High School Graduate	0.72	0.03	0.25	1.00	0.22	0.00	0.78	1.00
Post-Secondary Certificate or Diploma	0.76	0.03	0.21	1.00	0.33	0.01	0.65	1.00
University Bachelor's Degree	0.77	0.03	0.20	1.00	0.24	0.02	0.75	1.00
University Graduate Degree	0.83	0.03	0.14	1.00	0.41	0.00	0.59	1.00

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata
Prepared by: Enterprise and Advanced Education
Analysis excludes those with less than high school or who have some post-secondary

The relationship between levels of education and employment for women was statistically significant at the 0.01 level (99% confidence level). As females gain more knowledge, skills, and experience, their chance of being employed improves. The results, therefore, indicate that training and education are paramount in terms of gaining employment and employment rates are highest for female graduates of post-secondary education.

[14] W. Craig Riddell and Xueda Song, *The Causal Effects of Education on Adaptability to Employment Shocks: Evidence from the Canadian Labour Market*, Canadian Labour Market and Skills Researcher Network, February 2009

Wage, Salary, and Education Levels in Alberta

The following section compares wage and salary information to levels of education in Alberta. This section tests whether wage rates are related to or dependent on levels of education that female and male Albertans have against the alternative hypothesis that wage earnings are independent or unrelated to levels of education. To determine whether the association between education levels and wage rates was statistically significant, the Pearson Chi-Square test was used. Tables created from data from Statistics Canada's 2012 Labour Force Survey, show the average wage rates for males and females.

Wage, Salary, and Education Levels in Alberta

Male Population in Alberta

Average hourly wage rates are displayed for Alberta males in Table 4A. The table demonstrates that males experienced an increase in average hourly wage rates with the completion of post-secondary education. Alberta males consistently attained higher average hourly wage rates upon completion of a post-secondary certificate or diploma, a university bachelor's degree, or a university graduate degree.

Table 4A shows that males; aged 15 years and over, with a high school diploma could expect to earn an average of $23.28 per hour. Males in the same age group with a post-secondary certificate or diploma made $27.30 an hour, with a university bachelor's degree made $33.72 per hour, and those with a university graduate degree earned $35.94 per hour.

Table 4A

Education and Wages for Alberta Males, 2012

	High School Graduate	Post-Secondary Certificate or Diploma	University Bachelor's Degree	University Graduate Degree
15 to 19	$10.54	$13.22	N/A	N/A
20 to 24	$16.06	$21.10	$20.37	$19.89
25 to 29	$23.83	$28.80	$26.20	$26.29
30 to 34	$25.21	$30.19	$33.08	$28.92
35 to 39	$25.94	$30.31	$37.52	$37.54
40 to 44	$26.32	$31.75	$38.09	$33.70
45 to 49	$26.80	$31.27	$39.59	$40.92
50 to 54	$28.22	$33.09	$39.71	$51.91
55 to 59	$27.40	$30.87	$35.99	$40.02
60 to 64	$25.99	$28.12	$29.96	$45.61
65 to 69	$19.80	$21.58	$36.67	$34.61
Average	$23.28	$27.30	$33.72	$35.94

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata
N/A Data not available

Wage, Salary, and Education Levels in Alberta

Table 4B shows how wages relate to levels of education for males. Hourly wages were transformed into wage groups. Details on the wage categories are in the appendix A. Table 4B, shows that 47.3% of low wage earners had a high school diploma and made up 30.1% of the employed male population. Those who obtained a graduate degree made up 14.4% of high wage earners, almost double their share of 7.9% of the employed male working age population. Males are more likely to be in higher wage categories as their education increases

Table 4B investigates the relationship between levels of education and wages, and tests the hypothesis that earnings are related to education for men in Alberta, by using the Pearson Chi-Square test.

Table 4B

Alberta Hourly Wage Categories by Education for Males, 2012

	Low	Lower Middle	Upper Middle	High	Share of Employed Male Population
High School Graduate	47.3%	36.7%	23.1%	13.3%	30.1%
Post-Secondary Certificate or Diploma	34.5%	44.8%	52.3%	45.0%	44.3%
University Bachelor's Degree	12.9%	13.6%	17.3%	27.2%	17.7%
University Graduate Degree	5.4%	4.9%	7.4%	14.4%	7.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata
Prepared by: Enterprise and Advanced Education
Analysis excludes those with less than high school or who have some post-secondary

The relationship between hourly wages and education levels was statistically significant at the 0.01 level of probability (99% confidence level), and was consistent with past research.[15] The outcome of this test shows that as males gain more knowledge, skills and experience, their chance of higher earning increases. Therefore, wage rates are related to levels of education.

[15] W. Craig Riddell, *The Impact of Education on Economic and Social Outcomes: An Overview of Recent Advances in Economics*, Canadian Policy Research Networks Inc., 2006

Female Population in Alberta

Alberta females experienced an increase in hourly wage rates with higher levels of education, even though female wage rates were lower than males. Females with a university bachelor's degree experienced a higher hourly wage at a younger age, and this was consistent throughout the working age population. Alberta females with a university graduate degree experienced the highest average hourly wage rate.

Table 5A shows that Alberta females, ages 15 and over, with a high school diploma earned an average of $17.65 per hour. Female Albertans in the same age group with a post-secondary certificate or diploma made an average of $20.24 per hour, with a university bachelor's degree made an average of $27.07 per hour, and those with a university graduate degree earned an average of $28.98 per hour.

Table 5A

Education and Wages for Alberta Females, 2012

	High School Graduate	Post-Secondary Certificate or Diploma	University Bachelor's Degree	University Graduate Degree
15 to 19	$10.07	$9.68	N/A	N/A
20 to 24	$12.95	$15.64	$16.96	$8.63
25 to 29	$16.86	$20.34	$24.01	$21.70
30 to 34	$17.84	$21.37	$27.15	$30.75
35 to 39	$19.41	$21.90	$30.18	$32.53
40 to 44	$19.82	$23.39	$30.84	$31.86
45 to 49	$21.82	$23.49	$32.71	$32.95
50 to 54	$22.50	$26.35	$31.98	$38.64
55 to 59	$22.23	$23.61	$33.06	$34.49
60 to 64	$17.04	$21.55	$24.21	$33.04
65 to 69	$13.60	$15.32	$19.56	$25.16
Average	$17.65	$20.24	$27.07	$28.98

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata
N/A Data not available

Wage, Salary, and Education Levels in Alberta

Table 5B shows how wages relate to levels of education for females. Hourly wages were transformed into wage groups. Details on the wage categories are in the appendix A. Table 5B, shows that 44.2% of low wage earners had a high school diploma and they accounted for 29.0% of the employed female working age population. Women, who obtained a graduate degree made up 16.3% of high wage earners, more than double their share of 7.3% of the employed female population. Females are more likely to be in higher wage categories as their education increases

Table 5B investigates the relationship between levels of education and wages, and tests the hypothesis that earnings are related to education for women in Alberta, by using the Pearson Chi-Square test.

Table 5B

Alberta Hourly Wage Categories by Education for Females, 2012

	Low	Lower Middle	Upper Middle	High	Share of Employed Female Population
High School Graduate	44.2%	34.4%	24.7%	11.7%	29.0%
Post-Secondary Certificate or Diploma	37.6%	44.6%	46.4%	32.6%	40.4%
University Bachelor's Degree	14.2%	16.8%	23.5%	39.4%	23.2%
University Graduate Degree	4.0%	4.2%	5.4%	16.3%	7.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata
Prepared by: Enterprise and Advanced Education
Analysis excludes those with less than high school or who have some post-secondary

The association between wage rates and education levels was statistically significant at the 0.01 level of probability (99% confidence level), and is supported by past findings.[16] This means that females with greater levels of education on average can expect to earn higher wages.

[16] W. Craig Riddell, *The Impact of Education on Economic and Social Outcomes: An Overview of Recent Advances in Economics*, Canadian Policy Research Networks Inc., 2006

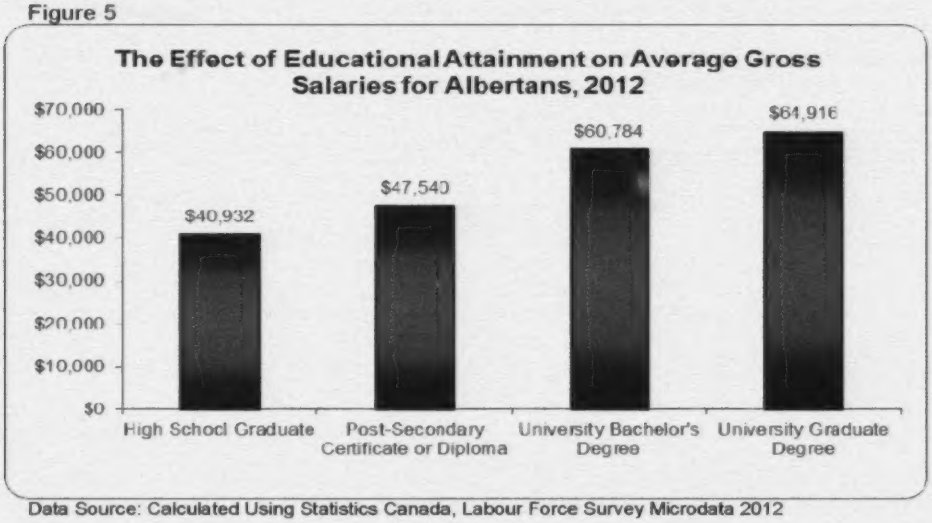
Wage, Salary, and Education Levels in Alberta

Education and Earnings

The information in Figure 5 displays the relationship between levels of post-secondary education and earnings. Average gross salaries were calculated by multiplying average hourly earnings, provided by Statistic Canada, by 2000 hours.

In 2012, a post-secondary certificate or diploma graduate could expect to earn 16% more than a high school graduate. A university bachelor's degree graduate could anticipate earning 28% more than a post-secondary certificate or diploma graduate, and those with a graduate degree could forecast earning 7% more than a university bachelor's degree graduate. This is consistent with other findings that as one's credentials increase, income also increases.[17]

Figure 5



Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata 2012

[17] *Alberta Post-Secondary Graduate Outcomes Survey: Class of 2009/2010*, E.A.E, 2011

Wages, Occupations and Industries in Alberta

This section discusses wages, occupations, industries, and education levels. Albertans earning differences are examined by education level for different occupations and industries. The top ten paying industries and occupations are then examined to identify what proportion of the different educational levels work in these occupations and industries.

Table 6 shows the average wage by occupation and education. Albertans employed in Senior management occupations with a high school education on average earned $41.60 an hour. With a post-secondary diploma or certificate, on average they made $43.98 an hour, with a bachelor's degree they earned an average hourly wage of $45.61 and those with a graduate degree, earned an hourly rate of $57.42.

Table 6

Average Wage by Occupation and Education

Occupation	High School Graduate	Post-Secondary Certificate or Diploma	University Bachelor's Degree	University Graduate Degree	Average Wage
Senior Management Occupations	$ 41.60	$ 43.98	$ 45.61	$ 57.42	$ 47.15
Other Management Occupations	$ 37.02	$ 36.95	$ 41.13	$ 44.76	$ 39.97
Professional Occupations in Business and Finance	$ 30.66	$ 32.41	$ 38.33	$ 38.73	$ 35.03
Financial, Secretarial and Administrative Occupations	$ 22.25	$ 23.69	$ 25.38	$ 29.76	$ 25.27
Clerical Occupations, Including Supervisors	$ 19.46	$ 20.99	$ 21.48	$ 21.16	$ 20.77
Natural and Applied Sciences and Related Occupations	$ 33.05	$ 33.69	$ 37.68	$ 39.65	$ 36.02
Professional Occupations in Health, Nurse Supervisors and Registered Nurses	$ 36.38	$ 36.09	$ 40.83	$ 39.05	$ 38.09
Technical, Assisting and Related Occupations in Health	$ 21.97	$ 25.57	$ 23.57	$ 23.48	$ 23.65
Occupations in Social Science, Government Service and Religion	$ 26.71	$ 28.76	$ 33.16	$ 38.27	$ 31.73
Teachers and Professors	$ 27.79	$ 33.19	$ 29.66	$ 35.01	$ 31.41
Occupations in Art, Culture, Recreation and Sport	$ 22.44	$ 23.42	$ 28.13	$ 39.30	$ 28.32
Wholesale, Technical, Insurance, Real Estate Sales Specialists, and Retail	$ 24.39	$ 23.48	$ 29.54	$ 24.19	$ 25.40
Retail Salespersons, Sales Clerks, Cashiers, Including Retail Trade Supervisors	$ 16.23	$ 17.09	$ 14.43	$ 14.19	$ 15.49
Chefs and Cooks	$ 14.75	$ 17.87	$ 15.58	$ 15.30	$ 15.88
Occupation in Protective Services	$ 20.42	$ 22.25	$ 26.99	$ 24.80	$ 23.62
Childcare and Home Support Workers	$ 15.13	$ 14.39	$ 13.87	$ 14.71	$ 14.52
Sales and Service Occupations n.e.c.	$ 16.28	$ 16.23	$ 16.51	$ 15.85	$ 16.22
Contractors and Supervisors in Trades and Transportation	$ 32.96	$ 35.88	$ 36.01	$ 37.80	$ 35.66
Construction Trades	$ 25.20	$ 30.53	$ 20.42	$ 22.42	$ 24.64
Other Trades Occupations	$ 25.95	$ 29.81	$ 28.34	$ 29.15	$ 28.31
Transport and Equipment Operators	$ 23.17	$ 23.89	$ 25.08	$ 20.83	$ 23.24
Trades Helpers, Construction, and Transportation Labourers	$ 17.59	$ 19.97	$ 19.12	$ 20.30	$ 19.24
Occupations Unique to Primary Industry	$ 18.95	$ 21.41	$ 23.16	$ 25.41	$ 22.23
Machine Operators and Assemblers in Manufacturing, Including Supervisors	$ 25.35	$ 27.04	$ 27.47	$ 26.20	$ 26.51
Labourer in Processing, Manufacturing and Utilities	$ 18.13	$ 18.83	$ 20.25	$ 15.91	$ 18.28
Average	$ 23.59	$ 26.26	$ 28.96	$ 32.62	$ 26.66

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata 2012

Wages, Occupations and Industries in Alberta

Table 7 shows the average wage by industry and education. Albertans employed in the Construction industry with a high school education on average made $26.93 an hour. With a post-secondary diploma or certificate on average, they earned $27.90 an hour, hourly earnings for a bachelor's degree holder were $30.10 and those with a graduate degree earned an average hourly rate of $31.54.

Table 7

Average Wage by Industry And Education

Industry	High School Graduate	Post-Secondary Certificate or Diploma	University Bachelor's Degree	University Graduate Degree	Average Wage
Agriculture	$ 18.43	$ 14.52	$ 15.81	$ 14.81	$ 16.23
Forestry, Fishing, Mining, Oil and Gas	$ 31.29	$ 33.09	$ 42.81	$ 44.15	$ 36.17
Utilities	$ 32.82	$ 34.96	$ 43.04	$ 41.19	$ 36.54
Construction	$ 26.93	$ 27.90	$ 30.10	$ 31.54	$ 28.59
Manufacturing - durables	$ 23.99	$ 27.40	$ 26.70	$ 26.18	$ 26.26
Manufacturing non-durables	$ 21.55	$ 26.13	$ 32.39	$ 35.93	$ 26.49
Wholesale Trade	$ 22.41	$ 26.89	$ 25.59	$ 32.42	$ 25.35
Retail Trade	$ 19.35	$ 20.21	$ 22.03	$ 18.81	$ 20.07
Transportation and Warehousing	$ 26.47	$ 28.19	$ 31.17	$ 28.84	$ 28.19
Finance, Insurance, Real Estate and Leasing	$ 24.39	$ 26.59	$ 28.74	$ 36.18	$ 27.14
Professional, Scientific and Technical Services	$ 25.17	$ 29.00	$ 29.79	$ 38.57	$ 29.59
Management, Administrative and Other Support	$ 19.07	$ 21.72	$ 24.65	$ 19.24	$ 21.14
Educational Services	$ 24.06	$ 26.67	$ 28.20	$ 35.03	$ 27.83
Health Care and Social Assistance	$ 21.37	$ 24.63	$ 27.54	$ 29.21	$ 25.08
Information, Culture and Recreation	$ 19.94	$ 22.70	$ 23.01	$ 35.76	$ 22.68
Accommodation and Food Services	$ 15.72	$ 17.29	$ 15.38	$ 16.86	$ 16.30
Other Services	$ 19.90	$ 23.08	$ 23.07	$ 26.72	$ 22.44
Public Administration	$ 30.85	$ 31.90	$ 36.98	$ 38.97	$ 33.57
Average	$ 23.59	$ 26.26	$ 28.96	$ 32.62	$ 26.66

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata 2012

Wages, Occupations and Industries in Alberta

Table 8 lists the top ten highest paying occupations and shows the employment shares for the four education categories. Senior management occupations had the highest hourly pay with an average of $48.22. Of the senior Managers, 8.5% had a high school diploma, 23% had a post-secondary diploma or certificate, 33.7% had a bachelor's degree, and 34.8% with a graduate degree. Therefore, to have a higher chance of being in the top 10 occupations with highest wages, some form of education after high school will be required. High school graduates represent 29.4% of the employed population but in nine out of the ten occupations, the proportion of high school graduates is lower than 29.4%.

Table 8

Proportion of Employment by Education in the Top Ten Paying Occupations

Occupation	High School Graduate	Post-Secondary Certificate or Diploma	University Bachelor's Degree	University Graduate Degree	Total	Average wage	Wage Rank
Senior Management Occupations	8.5%	23.0%	33.7%	34.8%	100%	$ 48.22	1
Other Management Occupations	24.4%	40.7%	23.3%	11.6%	100%	$ 39.23	2
Professional Occupations in Health, Nurse Supervisors and Registered Nurses	3.2%	28.4%	45.5%	22.9%	100%	$ 38.68	3
Natural and Applied Sciences and Related Occupations	11.2%	39.0%	35.3%	14.6%	100%	$ 35.44	4
Contractors and Supervisors in Trades and Transportation	29.3%	62.5%	6.9%	1.4%	100%	$ 35.22	5
Professional Occupations in Business and Finance	11.5%	27.7%	44.7%	16.1%	100%	$ 34.90	6
Occupations in Social Science, Government Service and Religion	12.5%	35.3%	31.9%	20.3%	100%	$ 31.71	7
Teachers and Professors	5.1%	14.1%	51.5%	29.2%	100%	$ 31.36	8
Other Trades Occupations	36.0%	55.8%	7.2%	0.9%	100%	$ 28.27	9
Construction Trades	23.0%	71.8%	3.9%	1.3%	100%	$ 27.01	10
Total Employment Share	29.4%	42.6%	20.1%	7.9%	100%		

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata 2012
Analysis excludes those with less than high school or who have some post-secondary

Table 9 lists the top ten highest paying industries and shows the employment proportion of the four education categories. The Utilities industry on average was the highest paying industry with an average hourly wage of $36.50. Of those in the utilities industry, 24.2% had a high school diploma, 51% had a post-secondary diploma or certificate, 19.8% had a bachelor's degree, and 4.9% with a graduate degree.

Table 9

Proportion of Employment by Education in the Top Ten Paying Industries

Industry	High School Graduate	Post-Secondary Certificate or Diploma	University Bachelor's Degree	University Graduate Degree	Total	Average Wage	Wage Rank
Utilities	24.2%	51.0%	19.8%	4.9%	100%	$36.50	1
Forestry, Fishing, Mining, Oil and Gas	27.6%	42.4%	21.3%	8.6%	100%	$36.27	2
Public Administration	20.2%	40.9%	26.6%	12.3%	100%	$33.66	3
Professional, Scientific and Technical Services	13.6%	34.3%	35.4%	16.7%	100%	$29.62	4
Construction	36.5%	52.9%	9.1%	1.5%	100%	$28.35	5
Transportation and Warehousing	42.1%	40.8%	13.4%	3.7%	100%	$28.19	6
Educational Services	12.1%	23.1%	40.7%	24.1%	100%	$27.83	7
Finance, Insurance, Real Estate and Leasing	30.1%	38.8%	24.4%	6.7%	100%	$27.14	8
Manufacturing non-durables	39.3%	41.0%	16.2%	3.4%	100%	$26.49	9
Manufacturing - durables	32.8%	53.6%	10.3%	3.4%	100%	$26.26	10
Total Employment Share	29.4%	42.6%	20.1%	7.9%	100%		

Data Source: Calculated Using Statistics Canada, Labour Force Survey Microdata 2012
Analysis excludes those with less than high school or who have some post-secondary

Summary and Conclusions

Albertans holding a university graduate degree experienced the highest participation rate at 83.5%, closely followed by those with a bachelor's degree at 82.5%. Thus, there was a positive relationship between educational attainment and the participation in the labour force.

The employment rate for those with a post-secondary certificate or diploma was 5.1 percentage points higher than for high school graduates. Albertans with a university graduate degree experienced the highest employment rate, at 80.7% while those with a bachelor's degree had the second highest rate at 79.7%. For males and females, as their education levels rose, their chance of being unemployed decreased over the ten year period.

For both genders, there was a positive relationship between higher levels of education and higher hourly wage rates. Thus, it can be concluded that on average higher pay can be expected from higher education. Most of the top ten paying industries and occupations employed a higher proportion of people with post-secondary education than there proportion of the employed population. This suggests that you are more likely to work in these top industries and occupations if you have an education level higher than high school.

In conclusion, for both males and females, a higher level of educational attainment results in increased participation in the workforce, additional employment opportunities, reduced chance of unemployment, and higher earnings throughout the working career.

Appendix A

The wage categories are determined by dividing the data into quartiles (four equal groups) that each contains approximately 25% of the employed survey respondents who were not self-employed during the reference week. The groups do not contain exactly 25% due to hourly wages that occurred multiple times around the 25%, 50% and 75% cut off points.

Alberta wage Categories for Males, 2012

For males the low hourly wage category was made up of those who earned less than $20 an hour. The lower middle category was between $20 up to and not including $28.85 an hour. The upper middle hourly wage group earned between $28.85 up to and not including $39.32 and male high wage earners where those who earned $39.32 and more an hour.

Alberta wage Categories for Females, 2012

For females the low hourly wage category was made up of those who earned less than $16 an hour. The lower middle category was between $16 up to and not including $22 an hour. The upper middle hourly wage group earned between $22 up to and not including $31.87 and female high wage earners where those who earned $31.87 and more an hour.